

Algebra...A review!

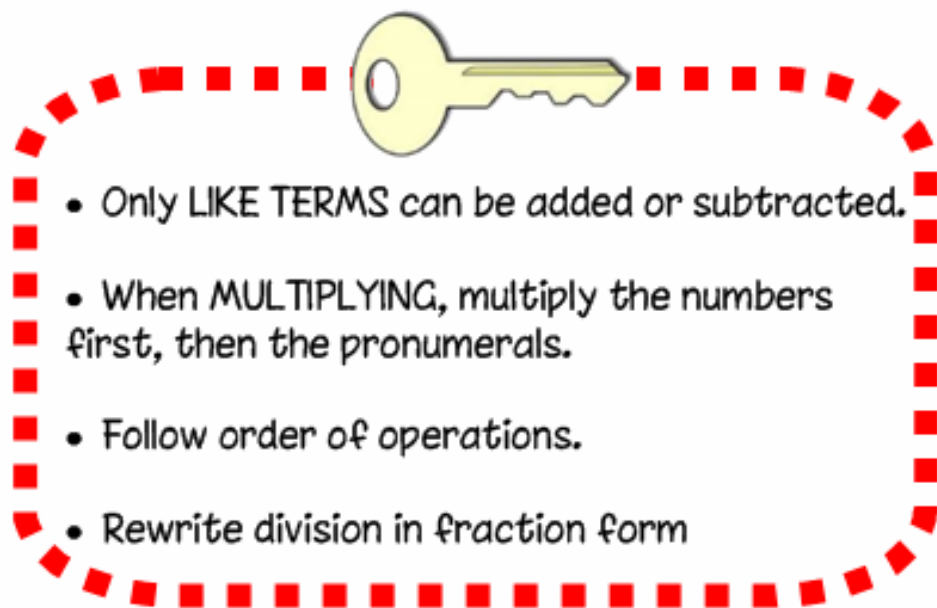
Simplifying...

What's a like term? where the variables are the same

Write 3 different like terms for the term $2x^2y$: $3x^2y$, $4yx^2$, x^2y

Circle the terms in the following expression:

$$5ws + 4w - 6wy^2 + y$$



Simplify the following:

a) $5x^2 + 5x - x^2$
 $4x^2 + 5x$

b) $5ab - 4ba$
 $= ab$

c) $4x^3 + x + 6x^2 - 3x - x^2$
 $-2x + 5x^2 + 4x^3$

d) $-6ab \times -5b$
 $30ab^2$

e) $(-3xy)^2$
 $9x^2y^2$


f) $-12xy \div 4$
 $-3xy$

Algebraic Fractions...

APPLY THE FRACTION RULES YOU LEARNT IN YEAR 7!

Addition & Subtraction

Fractions with different denominators




use the SMILEY method!

$$\frac{2}{3} \times \frac{5}{7} = \frac{14+15}{21}$$

$$= \frac{29}{21}$$

Multiplication

Multiplying Fractions



Use the "BIKINI" method!
Multiply the tops;
Multiply the bottoms!

$$\frac{2}{3} \times \frac{4}{5} = \frac{2 \times 4}{3 \times 5}$$


$$= \frac{8}{15}$$

Also remember to check diagonals to cancel any common factors.

Division

Dividing Fractions

"Cartwheel, then 'BIKINI'!"
Flip the second fraction, then multiply.



$$\frac{4}{5} \div \frac{2}{3} = \frac{4}{5} \times \frac{3}{2}$$

$$= \frac{4 \times 3}{5 \times 2}$$

$$= \frac{12}{10} = 1 \frac{1}{5}$$

Examples

a) $\frac{5x}{6} + \frac{3x}{4} = \frac{10x+9x}{12}$

$$= \frac{19x}{12}$$

b) $\frac{(x+2)}{3} \times \frac{x}{4} = \frac{4x+8-3x}{12}$

$$= \frac{x+8}{12}$$

c) $\frac{3m}{5} \times \frac{7a}{4} = \frac{21ma}{20}$

d) $\frac{11ab}{7xy} + \frac{14x}{5b} = \frac{55ab^2 + 98x^2y}{35bxy}$

e) $\frac{2x}{5} \div \frac{3}{4} = \frac{2x}{5} \times \frac{4}{3}$

$$= \frac{8x}{15}$$

f) $\frac{5m^2}{7} \div \frac{m}{2} = \frac{5m^2}{7} \times \frac{2}{m}$

$$= \frac{10m}{7}$$

L₁ | **N₁** | **D₁** | **E₁** | **X₈**

L₂ | **A₁** | **W₂** | **S₁**

$$x^m \times x^n = x^{m+n}$$

$$x^m \div x^n = \frac{x^m}{x^n} = x^{m-n}$$

$$(x^m)^n = x^{mn}$$

$$x^0 = 1$$

$$x^{-m} = \frac{1}{x^m}$$

$$x^{\frac{m}{n}} = \sqrt[n]{x^m}$$

power 1st.
root 2nd.

$$(\sqrt{x})^2 = x$$

Examples:

$$a) 9a^4 \times 8ab^3 = 72 a^5 b^3$$

$$b) (3x^3)^4 = 81 x^{12}$$

$$c) 32m^6 n^2 \div 4m^2 n^3 = 8m^4 n^{-1}$$

OR
 $\frac{8m^4}{n}$

$$d) \left(\frac{2a}{3}\right)^{\times 2} = \left(\frac{3}{2a}\right)^2 = \frac{9}{4a^2}$$

$$e) 16x^4 \div 12x^6 =$$

$$\frac{4}{3} \frac{16x^4}{12x^6} = \frac{4}{3} x^2 \quad \frac{4}{3} x^{-2}$$

f) Remove the fraction format

$$\frac{8x^2}{y^3} = 8x^2 y^{-3}$$

~~g) Rewrite in index form $7(x-4)^{-1} =$~~

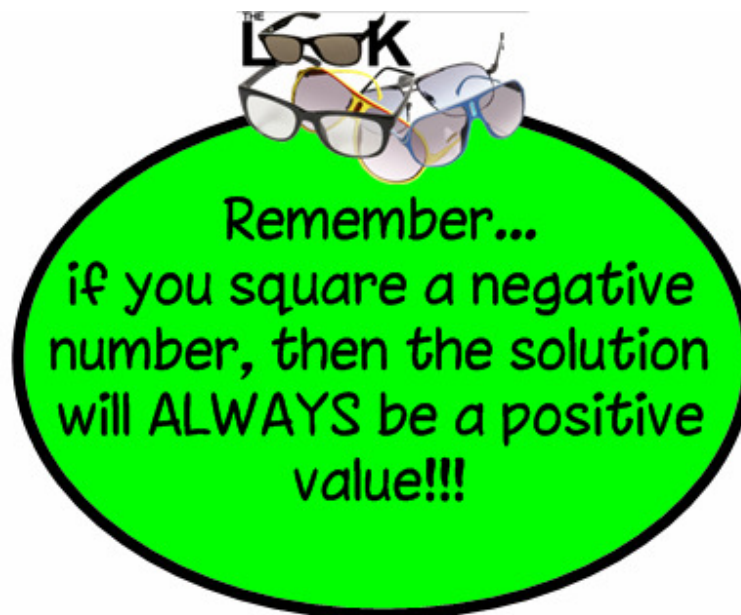
$$h) (-2w^2)^2 = 4w^4$$

$$i) -(2w^2)^2 = -4w^4$$

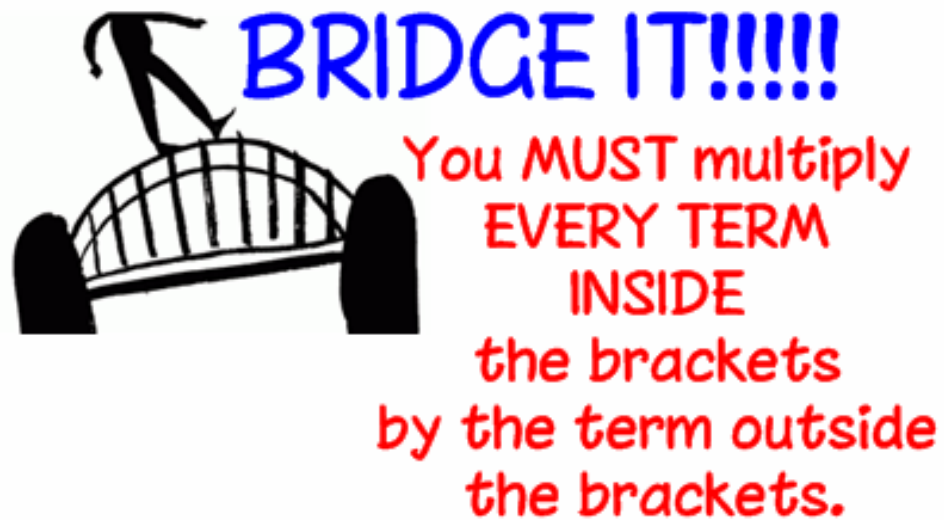
$$j) a^3 bc^2 \div 2ac^3 =$$

$$k) 8m^2 n \div 32mn =$$

$$l) (-x)^3 =$$



Removing grouping symbols...



Expand & simplify the following:

a) $2(x + 3) =$

b) $5a(a - 7) =$

c) $2p(3p + 1) - 5p =$

d) $2(6a - 7) + (8a - 3) =$

e) $(9m - 8) - (2m - 5) =$

f) $9 - (a - b) - (a + b) =$

g) $7(a - 3) - 2(3a - 1) =$